

INDEPENDENCE DENTAL CLINIC



JOURNEYMAN INTERNATIONAL

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THESIS PROJECT: BELIZE DENTAL CLINIC

For my final 5th year thesis project at Cal Poly I wanted to do a humanitarian based project in a developing world that could be actually built. I became connected with Global Outreach Mission (GOM) who were looking to build a dental clinic in the Central American country of Belize. GOM is a Christian missionary organization who has had much experience working in Belize and identified the need for a dental clinic in the coastal town of Independence in Southern Belize. I was happy to accept GOM's invitation to design the dental clinic. I teamed up with my friend and Cal Poly Construction Management student Daniel Wiens to realize this project. We share a same passion for using our background in the building industry to bring humanitarian aid to the developing world. Out of this passion Daniel and I founded Journeyman International (JI), a 501(c)3 non-profit organization who's vision is to establish financially feasible, socially beneficial, and environmentally responsible buildings in developing countries. The dental clinic is the flagship project for JI as we seek to develop similar projects all over the developing world in order to stimulate community growth with sustainable and reliable building design.



Daniel Wiens & Steven Shimmin

PROGRAM & SITE

Program: Dental Clinic + Residence

~3,500 square foot building

2 stories

First Floor: Dental Office:

- Reception/Waiting Room
- 3 Operating Rooms (Air Conditioned)
- Lab (Air Conditioned)
- Office
- Restroom
- Community/Multipurpose Room

Second Floor: Residence

Housing for a group of short term missionaries or a dentist and his/her family



THESIS PROJECT DESCRIPTION

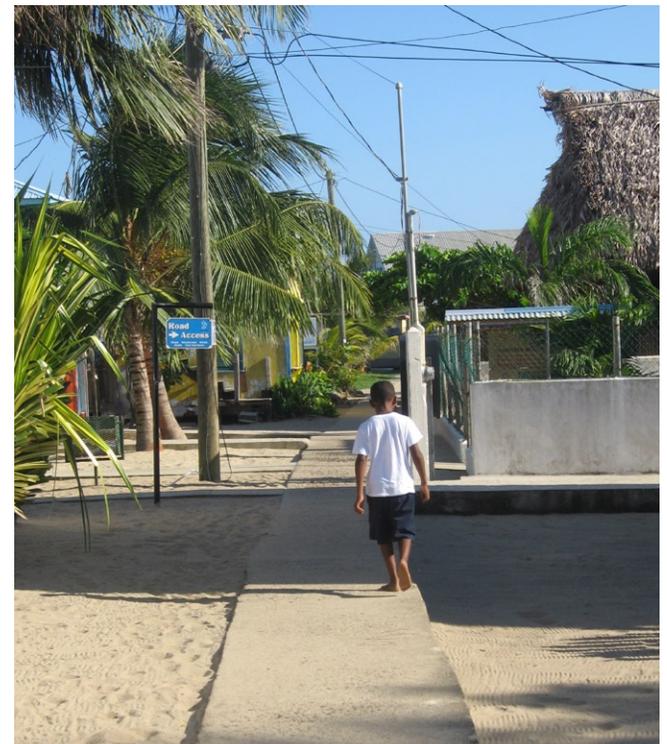
The job of the architect is to design and influence the built environments in which people live and interact. Most often, that role is manifested through the creation of buildings. Consequentially, there are three fundamental preconditions necessary for buildings to exist: 1. There is a need for a building, 2. There is an available site, 3. There are readily available building supplies. Therefore, the excellence of a building is measured by how successfully it meets the needs with the given materials. Excellent architecture, that elusive goal that is so competitively sought after, is not form, is not function, is not materiality, is not program, not Vitruvius' 3 points, not Corbusier's 5 points, not less, not more, but simply a desirable collision between a need, a site and a set of materials. Each of those things describe good architecture or are tools for generating good architecture, but are not what makes architecture inherently good. Each of the conditions represents different facets of the specific cultural context in which the building comes out of.

With this in mind, the architect is suddenly freed from following a lot of assumptions about what is necessary to make a building a good one. In this day of economic proliferation, the most shocking assumption we can forgo is that to make a good building, one requires a large budget. With a thesis project, the designer can have the luxury of not having to worry about a budget limiting from expressing their utmost creativity. However, I have chosen to take another path. The three conditions for buildings exist very frequently in developing nations. This has created a fascinating adaptive bastardization of modern materials and vernacular building methods. Yet there are two things that lack in the architecture of developing nations: an experienced designer and a contemporary sustainable sensitivity. It is my ambition to develop a method in which bring those two things to the rapidly developing regions of the world.

The test subject for this architectural experiment is a site in a town named Independence in the small Central American country of Belize. Independence a mid-sized town located in the mid-southern part of the country along the Caribbean coast. There is currently no dental care in Independence and people seeking a dentist have to drive an hour or more to see one. I am teamed up with a construction management student from Cal Poly and a missionary organization to provide a permanent facility for dental care for Independence. We have obtained a site that is roughly 17,000 square feet. It has been excavated and leveled. A fence has been built and drainage ditches have been dug to help protect the site. The building has been designed and is currently under construction.

One of the largest goals for this project is to use this building to implement and demonstrate various sustainable strategies that could be used on a larger scale in Belize. There are many vernacular strategies used in Belize to make indoor life bearable in the humidity, some more successful than others. I have studied and used some of these methods as well as introduced new strategies pioneered in the U.S. and Europe. The only building code in Belize is for the electrical system in the building. However, we are using the IBC as a guideline for making this a successful and safe project.

Belize is prone to natural disasters such as hurricanes and earthquakes so any building design will have to be structurally sound. Other environmental concerns include flooding and strong winds. As a medical facility, there will be specific electrical and plumbing demands. Independence is prone to various power outages so there may need to be a backup generator within the facility. There is internet and phone line accessibility that will be utilized in the facility as well.



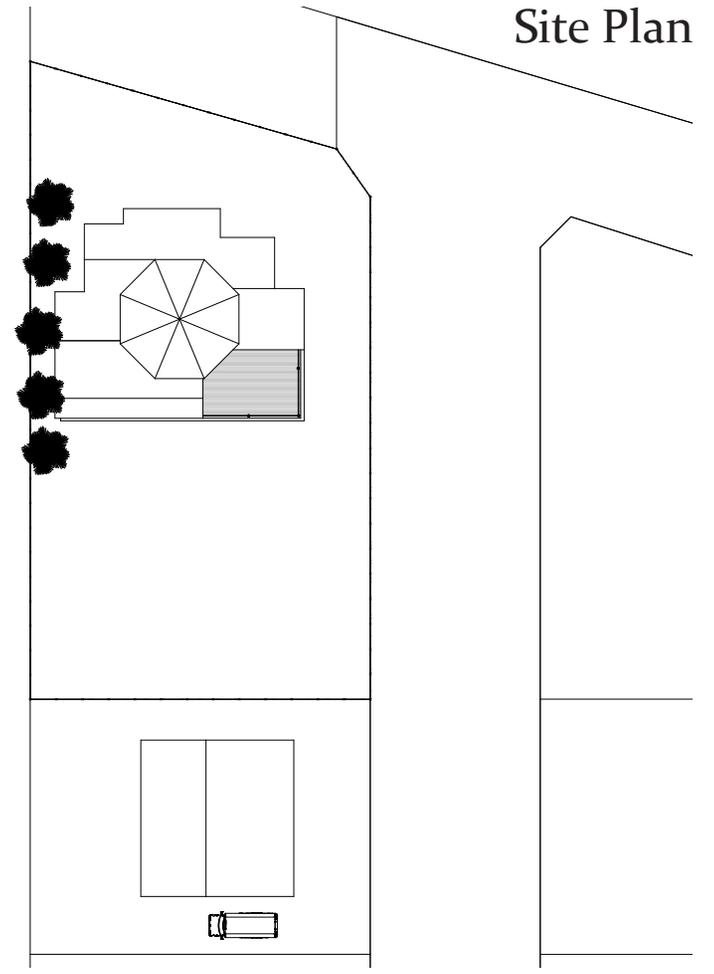
BUILDING DESIGN





Residence - Living Room

Clinic - Lobby

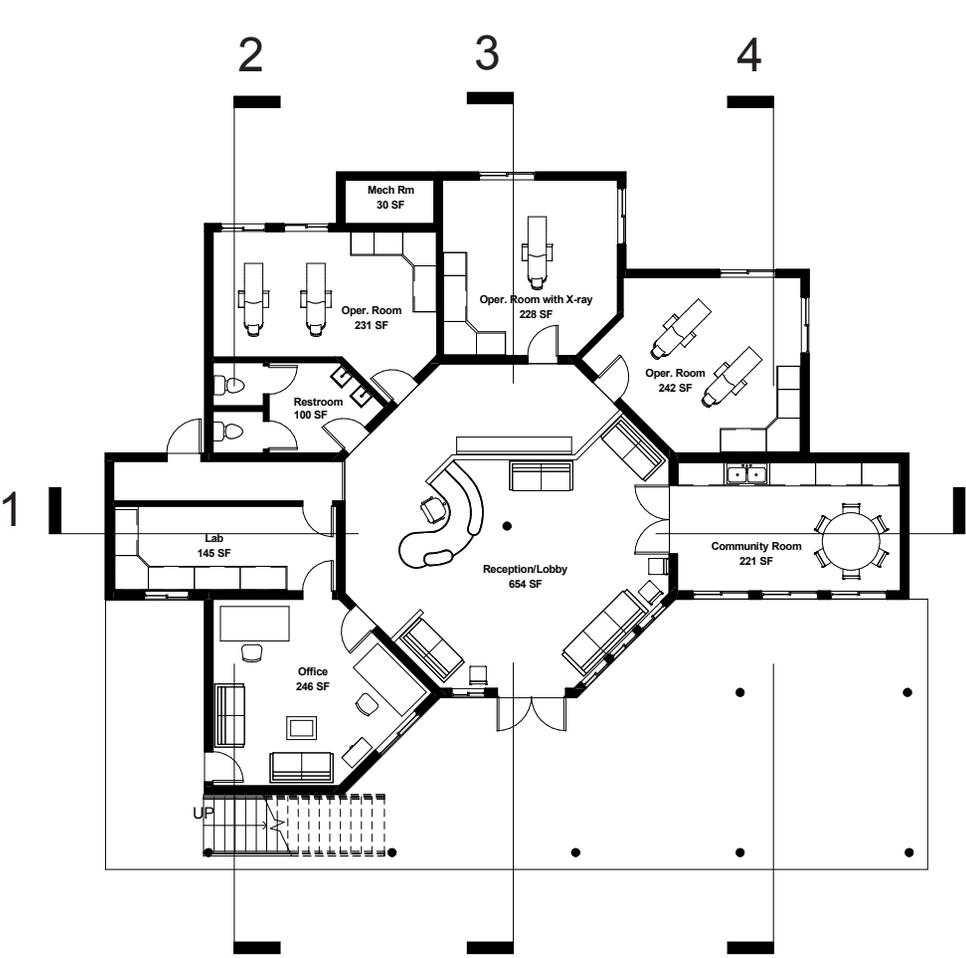


Site Plan

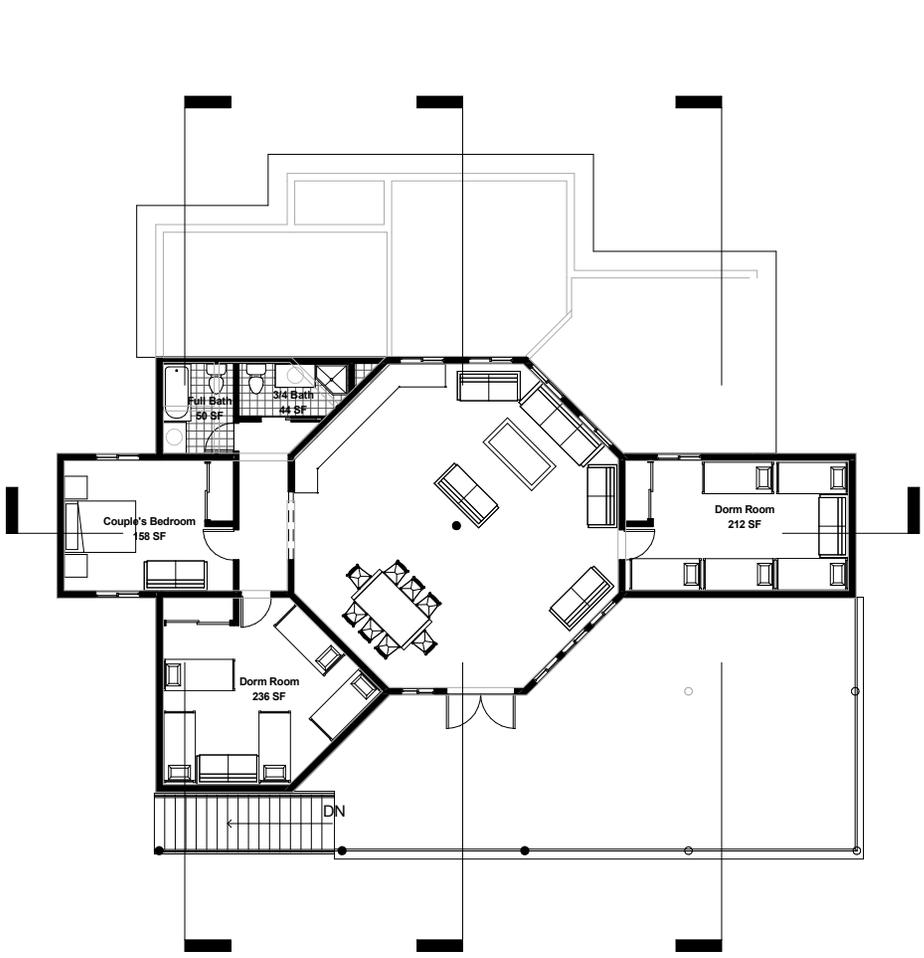
View from the North East



FLOOR PLANS



First Floor: Dental Clinic

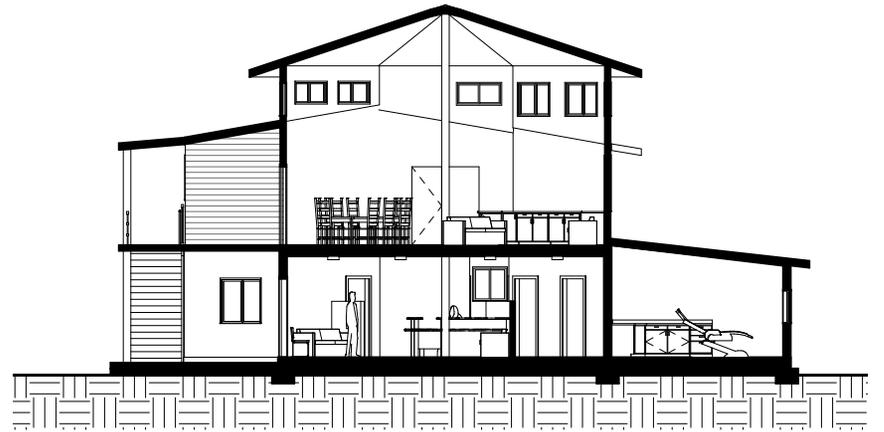


Second Floor: Residence

SECTIONS



Section 1



Section 3



Section 2



Section 4

ELEVATIONS



North



East



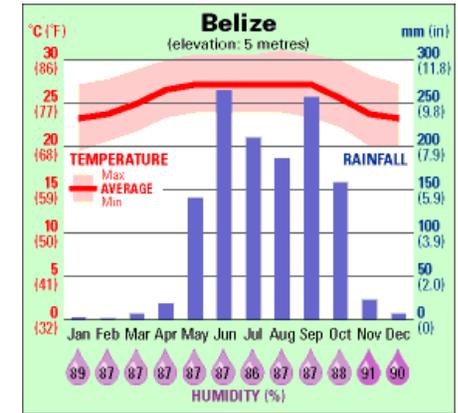
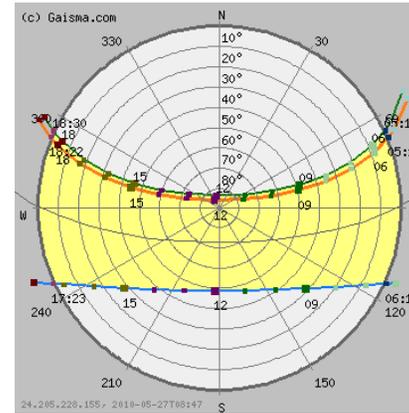
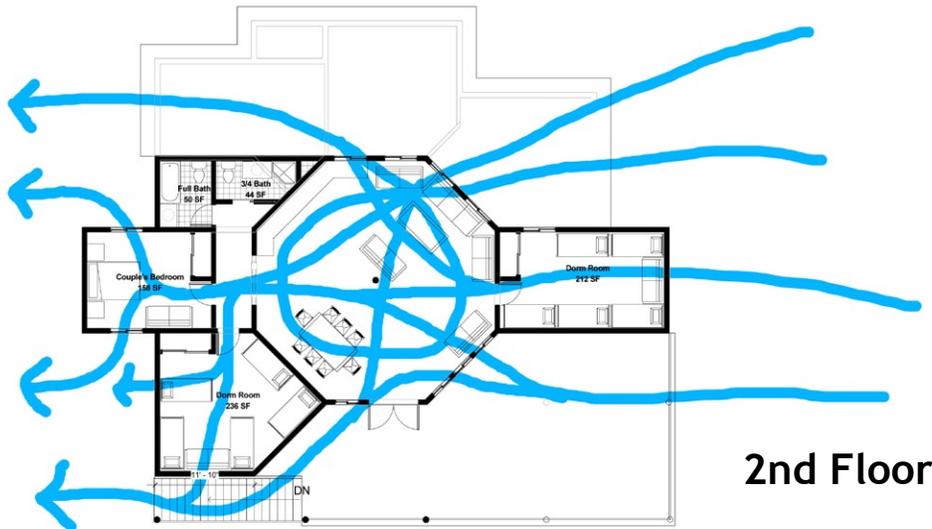
South



West

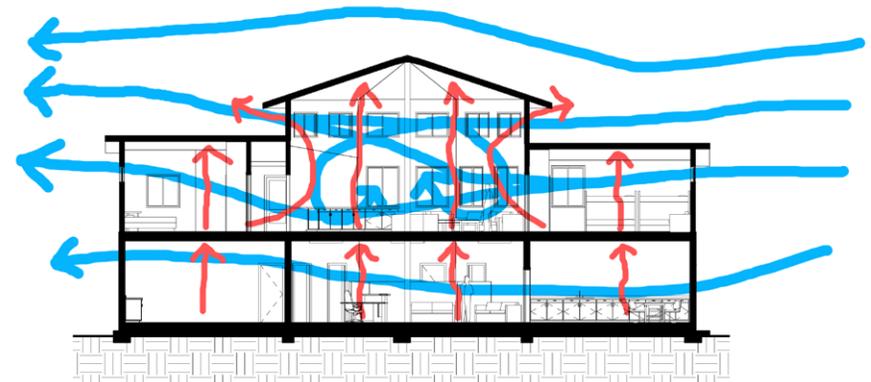
CLIMATE RESPONSE

Natural Ventilation Paths



Tropical climates are characterized by hot temperatures year-round, high levels of humidity, and a lot of precipitation. As a result, buildings in tropical climates are designed to shelter people from the elements as well as provide a relief from the intense heat. Providing shade from the sun and moving air through the building are the most effective means for cooling a building naturally. There are many successful vernacular strategies used to accomplish this such as using a light building envelope, filtering wind through the building, large ceilings to create a stack effect, shading the building with a large roof and trees, raising the building off the ground and minimizing direct sun exposure through proper orientation along the east-west axis.

Stack Effect



Air Conditioned Room

SOLAR STUDIES

10am

Noon

3pm

Summer
Solstice



Equinox



Winter
Solstice



FINAL MODEL



CONSTRUCTION PROGRESS

